

10796635



Europäisches Patentamt
European Patent Office
Office européen des brevets



Publication number: **0 656 628 A3**

EUROPEAN PATENT APPLICATION

Application number: 94308288.3

Int. Cl.⁶: **G11C 16/06, G05F 3/24**

Date of filing: 10.11.94

Priority: 01.12.93 US 160582

Date of publication of application:
07.06.95 Bulletin 95/23

Designated Contracting States:
BE DE DK ES FR GB GR IE IT LU NL PT SE

Date of deferred publication of the search report:
09.08.95 Bulletin 95/32

Applicant: **ADVANCED MICRO DEVICES INC.**
One AMD Place,
P.O. Box 3453
Sunnyvale,

California 94088-3453 (US)

Inventor: **Hollmer, Shane C.**
1870 Larsen Place
Santa Clara, CA 95051 (US)
Inventor: **Cleveland, Lee E.**
1870 Larsen Place
Santa Clara, CA 95051 (US)

Representative: **Wright, Hugh Ronald et al**
Brookes & Martin
High Holborn House
52/54 High Holborn
London WC1V 6SE (GB)

Programmed reference.

A programmable reference used to identify a state of an array cell in a multi-density or low voltage supply flash EEPROM memory array. The programmable reference includes one or more reference cells, each reference cell having a floating gate which is programmed to control its threshold value. The array cells are read by applying an identical voltage to the gate of the array cell and the reference cell and comparing outputs to determine the array cell state. During read of an array cell, the programmable reference cell is biased the same as the array cell, so that the difference in threshold values between reference cells and array cells remain constant with a change in V_{cc} . Circuitry is included for programming the reference cells utilizing a simple resistor ratio. Programming is performed at test time, preferably by the manufacturer, to assure V_{cc} remains within strict tolerances. The array cells are programmed and read without resistor biasing and under looser tolerances using the reference cells at a later time.

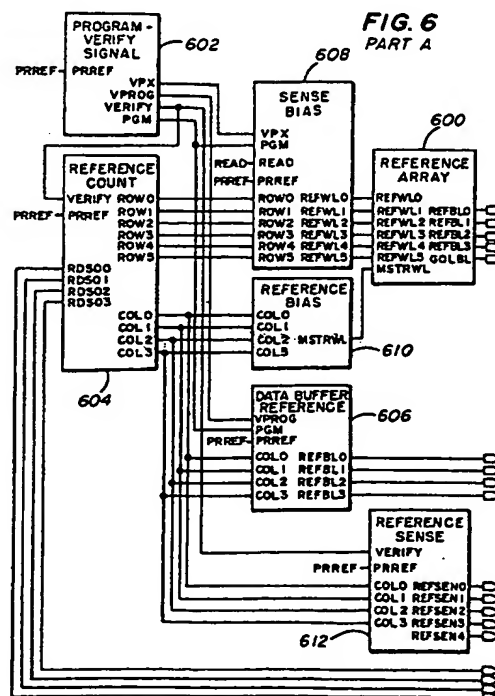
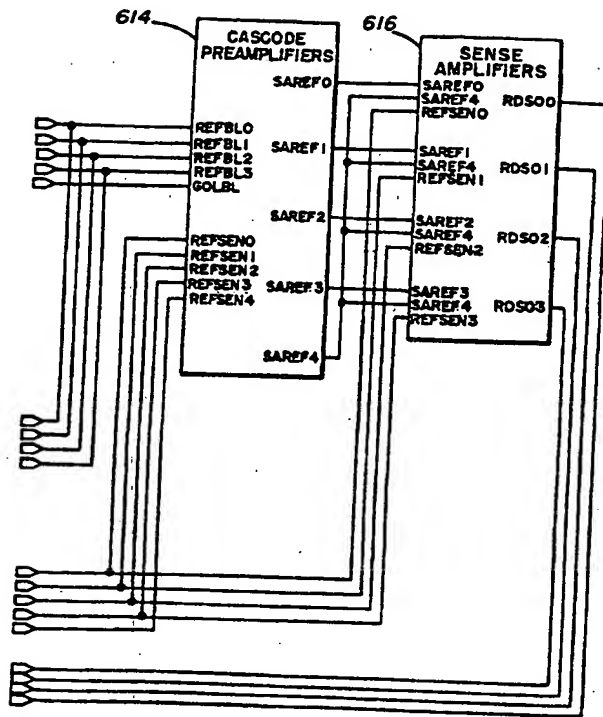


FIG. 6
PART B





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 30 8288

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	WO-A-90 12400 (SUNDISK CORPORATION)	1-10, 17-19, 21-25	G11C16/06 G05F3/24 G11C11/56
A	* the whole document *		
	----	11-16, 20	
X	EP-A-0 409 697 (GEMPLUS CARD INTERNATIONAL)	1, 3-6	
A	* the whole document *	8	

			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			G11C
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 June 1995	Examiner Degraeve, L
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

THIS PAGE BLANK (USPTO)